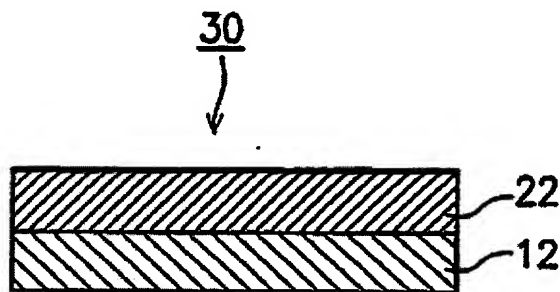


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Group textile fabric with moisture-conducting characteristics

A group textile fabric is introduced for taking moisture away from the skin of the wearer and for the transport of the moisture from its skin-sided surface to the opposite surface. The fabric contains a first hydrophilic fabric-layer. In order to take fast perspiration and other body fluids away from body surface of the user, which is composed of filaments with a relatively high denier; and second hydrophilic fabric layers. from filaments with a relatively low denier is built up, in order to draw perspiration and other body fluids from the first fabric layers.



## Description

The available invention concerns a group textile fabric and in the special compound fabric for taking from moisture away from the skin of the wearer and for transporting the moisture from the skin-sided surface to the opposite surface of the fabric.

In order to facilitate an absorbing of the wearer's perspiration, articles of clothing are made preferably of a textile fabric from natural fibers, like cotton, silk or linen or from a mixture of nature and synthetic fibers, such articles of clothing can not quickly transfer the moisture from the skin, although they can absorb perspiration of the skin surface area. Perspiration-absorbing articles of clothing require a certain time, in order to evaporate moisture. Over a certain time the moisture which is close at the skin is known to cause a cold, clammy-like feeling as well as a scrubbing, provoking and bacterium, and fungus-conveying conditions, in particular with sport clothing and underwear.

The US-PS 5.217.782 reveals a moisture-conducting multi-layer fabric. The moisture-conducting multi-layer fabric is particularly used to become incorporated in cloth width which can be taken up in the step area by underwear, for the control of dripping discharge, in order to alleviate urinary incontinence or that experience by colostomy patients. The multi-layer compound fabric contains a relative to thick internal moisture permeable hydrophobic fabric ply the positioning close to the skin of the clothes wearer. First relatively thin hydrophilic intermediate fabric layer is the hydrophobic fabric layer neighboring on the side of the skin of the wearer arranged second relative to thick outer hydrophilic fabric layers is neighboring to first hydrophilic fabric layers on to hydrophobic fabric layers the facing side the internal hydrophobic fabric is arranged from a suitable non absorbing fiber as for the example polyester constructed the first and second hydrophilic layers is preferably from a high absorbing fiber formed, as for the example from Allied Fibers distributed Hydrofil fire nylon fiber. The internal fabric layers of US 5.217.782 is hydrophobic and non-absorbing and is primarily meant to keeping the skin dry of the underwear wearer. The first hydrophilic fabric layers is primarily meant as 'transport' - layer, those intended to draw moisture from the hydrophobic layer and the underlying skin to the second hydrophilic fabric layers is primary as "memory" - layer. Due to the hydrophobic and non absorbing characteristics of the internal fabric layers the multi-layer compound fabric is only suitable a relative to, large liquid quantity, like urine, to absorb and unsuitable, in order to take away efficiently and fast a relatively small liquid quantity, like to the example small perspiration drops, from the neighboring body surface.

Outgoing from this problem definition, the invention's function is the basis to provide a group textile fabric which exhibits moisture-conducting characteristics and in particular can take away a relatively small liquid quantity fast even from the adjacent body surface.

In addition is a group textile fabric is provided, which can be converted to articles of clothing, like for example underwear, sport clothing, casual clothes and the like or that lining by articles of clothing, as for example waterproof clothing and like.

The solution of the task effected via first hydrophilic fabric layer to be drawn in order to take perspiration and other body fluids away fast from the body surface of the user, are those from filaments with a relatively high denier built up and second hydrophilic fabric layer, which is composed of filaments with a relatively low denier, in order to draw perspiration and other body fluids from the first fabric layers.

In accordance with a preferential arrangement of the available invention for first and second fabric layers completely and at the same time are formed through cords or weaving

In accordance with another preferential arrangement of the available invention each fabric layer is built up from polyester, nylon, acryl fiber or the like.

In accordance with a further preferential arrangement of the available invention the denier of the first fabric layers built up is preferably not larger than 6 filaments (=6 gram per 9000 meter. The denier of the second fabric layers of building up filaments is smaller than the denier of the filaments of the first fabric layers and preferably not larger than 3 (= 3 gram per 9000 meter.

From the invented compound fabric garment, like for example underwear, can being made sport clothing, casual clothes and the like, which are not distinguishable essentially in their outer appearance of conventional articles of clothing of similar type.

The invention is described more clearly using a design example represented in the drawing. Show:

Fig. 1 - a schematic cross section view of a group textile fabric in accordance with a preferential arrangement of the available invention;

Fig. 2 - a schematic cross section view of the structure of first fabric layers from the group textile fabric of the available invention used thread;

Fig. 3 - second fabric layer from the group textile fabric of the available invented yarn used a schematic cross section view of the structure.

A group textile fabric in accordance with a preferential arrangement of the available invention is in Fig. 1 represented and generally with the reference number designated 30 the group textile fabric 30 exhibits a first fabric layer 12 and second fabric layer 22, which is arranged adjacent on the first fabric layers 12. First and second fabric layers the 12 and 22 are made by means of any method known by the specialist.

The first hydrophilic fabric layers 12 is intended to be closer in the proximity to and in contact with the skin of the clothes wearer or to the skin than the second hydrophilic fabric layer 22. The first hydrophilic fabric layer 12 as shown in Fig. 2 knitted or woven thread10, that preferably consists of synthetic fibers, like for example polyester, nylon, acryl resin or the like. there if the first fabric layers 12 made are hydrophilic, the removal of moisture increases significantly, like for the example perspiration, urine or other body fluids, from which are close to skin of the first fabric layers 12.

The second hydrophilic fabric layers 22 as shown in Fig. 3 knitted or woven thread 20, that preferably consists of synthetic fibers, like for the example polyester, nylon, acryl resin or the like, according to invention first 12 and second 22 hydrophilic fabric layers can be formed completely and at the same time through for example cords or weaving. Although each fabric layer 12, 22 is present individually and separately, each layer therefore is integrated with every different one, the group textile fabric works as an individual unit.

Concerning the Fig. 2 and 3 the thread 10 is composed of filaments 100 and the thread 20 is composed of filaments 200. Preferably are the filaments 200 for the second hydrophilic fabric layer 22 are lighter or exhibit a lower denier than the filaments 100 for the first hydrophilic fabric layer 12. This characteristic provides that the second hydrophilic fabric layer 22 exhibits a higher moisture absorption ability of the disconnecting ability than the first hydrophilic fabric layer 12 exhibits from the skin surface in the first hydrophilic fabric layer 12 taken away moisture becomes of the first fabric layer 12 is pulled into the second hydrophilic fabric layer 22. This holds the skin side surface of the first fabric layer 12 in a dry state and thus creates a dry, pleasant feeling for the clothes wearer.

Due to the hydrophilic characteristic and the high disconnecting ability of the second fabric layer 22 one spreads absorbed perspiration over a relatively large range into the second fabric layer 22.. Therefore the water, which is contained in the perspiration held back by the second fabric layers 22, in that into open air one evaporates to large range, so that the group textile fabric in a shorter length of time can become drying than conventional materials.

The Filament denier for each fabric layer based on final requirements concerning the moisture control selected portion of each layer is based on the desired weight group textile fabric; the final use desired of the selected group textile fabric and the requirements for transporting of perspiration or other body fluids from the first fabric layer 12 into the second fabric layer 22. In a preferential arrangement of the available invention the denier of the filament 200 is preferably not larger than 3. The denier of the filament 100 is preferably larger than those of the filament 200 and not more larger than 6.

Although the cross section of the filaments 100 and 200 in the Fig. 2 and 3 is approximately represented, it should be understood by the specialist that the polyesters, nylon or acrylate resins of the first or second material layer 12 or 22 are able to be cross section-modified and are present as either spun or as filament.

Obviously the group textile fabric of the available invention can be converted to articles of clothing, like for example underwear, shirts, skirts, pants, sport clothing, casual clothes and the like. The articles of clothing are not essentially distinguishable in their outer appearance of conventional articles of clothing of similar type. The Composite textile material can be converted just as to feeding pieces of clothing, as for example waterproof clothing and like. In this case the group textile fabric will provide with an breathable interface on the side turned away concerning the skin of the wearer. The breathable interface can be attached to the second fabric layer by conventional diaphragm film laminating or transfer coating technology. The interface can be micro-porous and hydrophilic or preferably not porous and hydrophilic and exhibit a high moisture vapor transfer rate, whereby the interface protects the clothing from becoming wet.

Although the material of the available invention is preferably used as a clothing textile material, this can likewise for other purposes, like for example than perspiration tape, sock or bra-lining. Glove or its lining or insert for lady forming a compound with or diapers, to be used. During knitting or weaving an elastic thread can be used additionally for the production of the group textile fabric, in order to increase the fabric elasticity.

#### Patent claims

1. Group textile fabric, with:

- first hydrophilic fabric layers, in order to take perspiration and other body fluids away fast from the body surface of the user, which is composed of filaments with a relatively high denier; and
- second hydrophilic fabric layer, which is composed of filaments with a relatively low denier, in order to draw perspiration and other body fluids from the first fabric layers.

2. Fabric after claim 1, whereby completely and at the same time through cords or weaving were formed for first and second fabric layers.

3. Fabric after claim 2, whereby the first fabric layer is a material from the group of polyesters, nylon and acrylate resin.

4. Fabric after claim 2, whereby the second fabric layer is a material from the group of polyesters, nylon and acrylate resin.

5. Fabric after claim 1, whereby the relatively high denier is not larger than 6 (= 6 g/9 km).

6. Fabric after claim 1, whereby the relatively low denier is not larger than 3 (= 3 g/9 km).

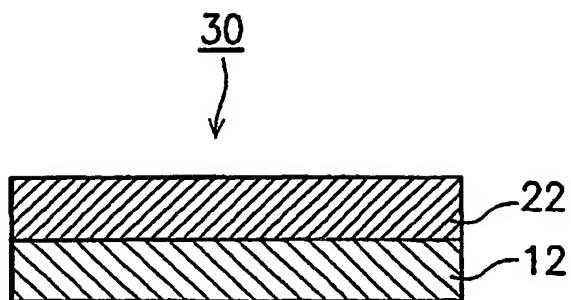


FIG. 1

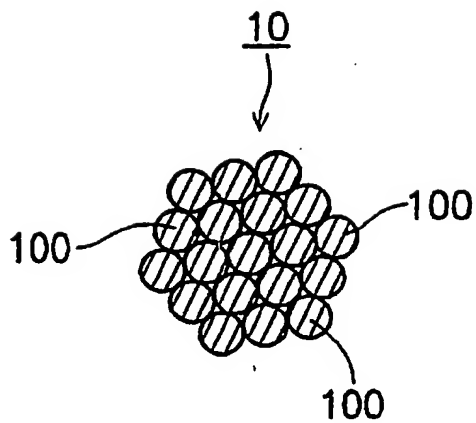


FIG. 2

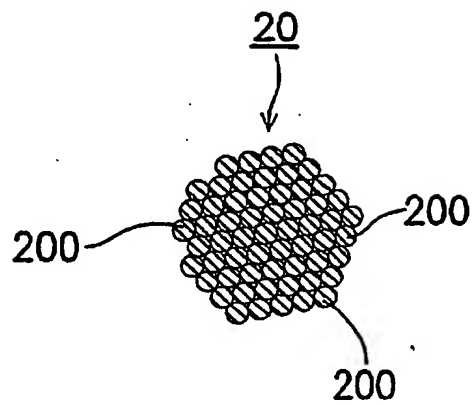


FIG. 3